CLAIMS

What is claimed is:

1. A radiation curable magnetic composition suitable for in-line printing comprising from 50 to 95 weight % of magnetic particles having an average particle size ranging from 1 micron (μ) to 200μ, in combination with 50 to 5 weight % of a radiation curable resin, said radiation curable magnetic composition having a viscosity within the range of 50 cps to 10,000 cps.

2. The composition of claim 1 comprising from 80 to 90 weight % magnetic particles.

3. The composition of claim 1, wherein the magnetic particles have an average size ranging from 10μ to 80μ.

4. The composition of claim 1, wherein the magnetic particles comprise a rare earth alloy.

5. The composition of claim 4, wherein the rare earth alloy is selected from the group consisting of a rare earth cobalt 5 alloy, a rare earth 2 transition element 17 alloy, and a rare earth iron alloy.

6. The composition of claim 1, wherein the radiation curable resin utilizes a free radical cure system, a cationic cure system or a hybrid free radical/cationic cure system.

7. The composition of claim 6, wherein the radiation curable resin utilizes a free radical cure system.

8. The composition of claim 7, wherein the free-radical cure system employs an acrylate, a methacrylate or a combination thereof.

9. The composition of claim 6, wherein the radiation curable resin utilizes a cationic cure system.

10. The composition of claim 9, wherein the cationic cure system employs an epoxide resin or a polyol resin.

11. A method for selectively applying a magnetic surface to a non-magnetic substrate, comprising:

a. combining magnetic particles having an average size within the range of 1μ to 200μ, with a radiation curable resin to form a radiation curable magnetic coating composition;

b. pattern applying a layer of the radiation curable magnetic coating composition directly to a predetermined portion of a surface of a non-magnetic substrate, said layer having a thickness within the range of 0.4 mils to 20 mils upon curing.

12. The method of claim 11, wherein the magnetic particles having an average size within the range of 10μ to 80μ.

13. The method of claim 12, wherein the magnetic particles having an average size within the range of 20μ to 70μ.

14 The method of claim 11, wherein the layer of the radiation curable magnetic coating composition has a thickness within the range of 0.4 mils to 20 mils upon curing.

15. The method of claim 11, wherein the step of pattern applying is performed by an in-line printer.

16. The method of claim 12, wherein the in-line printer is a flexo coater, roller coater, blanket coater, gravure coater, silk screen coater, rotary screen coater, slot die coater, vacuum coater or curtain coater.

17. The method of claim 16, wherein the in-line printer is a rotary screen coater.

18. A method for making an adhesive-free laminated product suitable for adhering by magnetic attraction to an iron based surface, comprising:

a. combining from 50 to 95 weight % of magnetic particles having an average size within the range of 1μ to 200μ, with 50 to 5 weight % of a radiation curable resin, and an effective amount of a curing agent, to form a radiation curable magnetic coating composition;

b. pattern applying a layer of the radiation curable magnetic coating composition directly to a predetermined portion of a surface of a non-magnetic substrate;

c. curing said pattern applied radiation curable magnetic coating composition to form a laminated product having a magnetic coating adhered to a predetermined portion of said non-magnetic substrate.

19. The method of claim 18, wherein before, during or after said curing step, said magnetic particles in said radiation curable magnetic coating composition are subjected to magnetic charging.

20. A composite object comprising a non-magnetic substrate having at least one surface to which is directly adhered a layer of a radiation cured magnetic

resin comprising 50 to 95 weight % of magnetic particles having an average size within the range of 1μ to 200μ, dispersed within 50 to 5 weight % of a radiation cured resin.

21. The composite object of claim 20, wherein the magnetic particles having an average size within the range of 10μ to 80μ.

22. The composite object of claim 21, wherein the magnetic particles having an average size within the range of 20μ to 70μ.

23. The composite object of claim 20, wherein the layer of the radiation curable magnetic coating composition has a thickness within the range of 0.4 mils to 20 mils upon curing.

24. The composite object of claim 20, wherein the non-magnetic substrate is selected from the group consisting of paper, cardboard, wood, ceramic, plastic, aluminum and combinations thereof.

25. The composite object of claim 24, wherein the non-magnetic substrate is paper.

26. The composite object of claim 24, wherein the non-magnetic substrate is cardboard.

27. The composite object of claim 25, wherein the paper is a sheet of paper having opposing sides.

28. The composite object of claim 27, wherein at least one side of the sheet of paper has printing or indicia.

29. The composite object of claim 28, wherein the side of the sheet of paper that is opposite the layer of the radiation cured magnetic resin has printing or indicia thereon.